Work Task E12:	**Butler Lake, Imperial National Wildlife Refuge**
Partners:	U. S. Fish and Wildlife Service (FWS) Bureau of Reclamation (Reclamation)
Point of Contact:	Nathan Lenon, LC-2457 (702) 293-8015
Purpose:	Potential habitat restoration project to improve water quality so the lake can support a self-sustaining population of native fish. If successful, this project would provide 43 acres of habitat for razorback sucker and bonytail.
Conservation Measures:	Potential site for creation of habitat for covered species.
Location:	River Mile 61.5, Arizona side, Imperial National Wildlife Refuge (INWR).
FY05 Estimate:	$55,000 for in-house staff for water quality monitoring and assessment of the backwater for native fish.
Project Description:	Butler Lake, a 43-acre (17.2 hectares) floodplain lake, with an approximate mean depth of 3 feet (0.9 meters) is located at river mile 61.5, approximately 160 meters east of the Colorado River. This backwater is seepage-driven, with no known surface connection to the Colorado, or any other body of water. The lack of freshwater flushing has caused the lake to become hypereutrophic (an advanced state of nutrient enrichment). In its current condition, Butler Lake provides little benefit to fish or wildlife. This assessment focused on eutrophication, or the gradual increase of nutrients in a body of water, as the key to understanding the lake's ecology. Eutrophication, is an inevitable, naturally-occurring process of ecological succession that lakes and ponds undergo as they age. Prior to the development of the Colorado River for water management purposes, periodic floods would scour away built-up salts, nutrients, and organic sediments, in effect "resetting" the eutrophication process. Because this resetting function no longer occurs, many isolated backwaters on the LCR continue this process uninterrupted, which eventually causes water quality conditions to degrade to levels which no longer support productive fisheries. At this point, waterfowl benefits are also greatly diminished, along with visual aesthetics.

Working jointly with INWR, Reclamation evaluated Butler Lake as a potential site for establishing a native fish refugium. This analysis consisted of a comprehensive limnological analysis, general surveys for fish and waterfowl, as well as a GIS-based bathymetry map. To date, over one year of baseline monitoring has been completed, which is a minimal requirement in the restoration of an isolated aquatic system. This data will provide: (1) a better understanding of what drives the aquatic system from an aquatic ecology perspective, and (2) a baseline from which to measure the success of any potential restoration activities.

In October of 2004, a report, *Butler Lake Native Fish Refugium, Preliminary Assessment,* was completed and distributed to project stakeholders. This report described the lake's ecology, probable causes of its poor water quality, and several alternative approaches for restoring the lake. Currently, no decision has yet been made whether or how to proceed with this project, however upcoming discussions between several interested parties will focus on reaching a decision.

Reclamation has performed a preliminary habitat assessment, researched possible approaches for habitat restoration, conducted water quality monitoring, and held discussions with project stakeholders to decide on a restoration course of action.